



Collective Inclusion

Introducing a new form of living

D. ALI DASLI

Colophon

Delft University of Technology

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Author student

D. Ali Dasli

4305701

Tutors

Ovl Klijn

Anne Kockelkorn

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Abstract

This research deals with the affordable housing problem for housing seekers who cannot find a house according to their needs and financial capacity; the single person household (solo) and couples with vulnerable financial and social status. Furthermore, it investigates whether the housing form "collective living", under the financing of cooperatives, can provide a solution for them. The research runs in parallel with the graduation studio Advanced Housing Design and is the backbone of my individual urban design in the collective master plan. From the themes diversity and community, the research's collective living is further investigated. Relationships between private units, shared space in cluster homes and collective spaces within the building and the relation of the residential complex with the master plan are explained in this study. The design is part of the master plan in Rotterdam Blijdorp where I will introduce the co-housing with shared spaces. By means of literature studies and case studies, this research will be supported in order to arrive at a concluding design vision and later a final design based on this, new and rather unknown form of living in the Netherlands, co-living.

Key words: Affordable housing, financial vulnerable target groups, new housing form, community, diversity, private, public, collective, shared space.

A. Introduction

A.1 Research themes & objectives

The Dutch housing market faces a major challenge. For citizens, especially for the low- and middle-income classes, it becomes more difficult to find a house. The low- and middle-income classes in the Netherlands are most concerned with problems such as affordable housing, housing requirements that cannot be met by low financial capacity and social status in society and housing markets. Aspects such as social cohesion, home enjoyment, connection to home and neighborhood are not even discussed. Potentials in the current market should still provide a solution for both, the economic and sociological framework, but the responses are insufficient and slow, causing the solutions to affordable housing to stagnate. Renewing and broadening

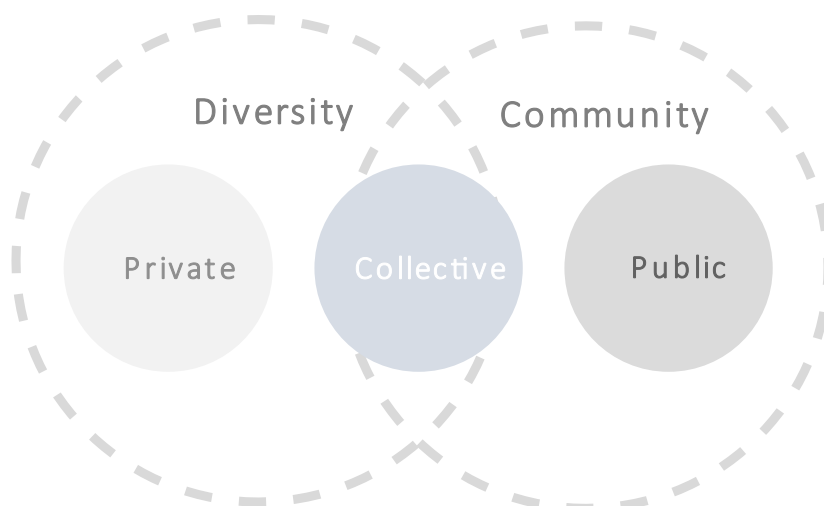


figure 1. Main and sub research themes

the perspective of targeted problem-solving in the housing market can provide new ways of solutions, the introduction of the new collective form of living.

To prepare this research and to program the design, I used two main themes, diversity and community. These themes are supported by the sub-themes private, collective and public which subdivide spaces into typology and user form (figure 1). By using the two main themes, diversity and community, I studied diversity in housing typologies, space typologies, form of use and characteristics of the different co-housing that forms communities by sharing spaces and functions with residents from different economic and social backgrounds. This report will introduce co-living as an alternative housing form in the Netherlands that offers affordable housing to single person household and couples in the low and middle income groups. This new form of housing should also strengthen the connection to the house, interaction between residents and habitat, and social cohesion.

A.II Problem statement, motivation & aim



figure 2. Housing shortage, low financial capacity, unstable housing market, increasing anonymity

Housing shortage

The problem begins with the most primary part of life and that is finding a place of residence, especially for singles and couples with low or middle income. The scarcity of suitable living spaces for these target groups is an increasing problem. Housing shortage in the Netherlands has risen sharply in recent years. The acute and increasing shortage of housing is caused by unstable price markets, low mortgage rates, strict building rules regarding CO2 emissions and high demand due to high population growth and migration from abroad, smaller regional towns and villages (Groenemeijer et al., 2018). The housing estate in the city is mainly owned by large commercial housing corporations who offer social housing (44,1%) (municipality of Rotterdam, n.d.). During the housing crisis between 2008 and 2013, house values dropped by 25% and the demand for owner-occupied housing decreased. In late 2013, there were attempts by the government to break the falling prices by reducing the transfer tax from 6% to 2% (Groot et al., 2018). The shortage of housing units, political and financial incentives has increased the demand for owner-occupied housing. The rising demand has stimulated the new construction sector for the production of new homes, after 2016 this has explosively increased (Langenberg, 2022). But despite the progress made so far in the production of residential housing, the housing market is under stress due to a large shortage. The affordability of housing for these target groups continues to be manifested by the extreme shortage of urban housing units needed to meet ever-increasing demand. High rents, unpredictable market speculation, unstable and independent land and building costs, and rising housing scarcity compound the housing shortage for the single person and low- and middle-income couples. This problem needs to be addressed by housing seekers themselves, as other approaches have failed to solve the affordable housing problem.

Research motivation

Although housing is a basic right, it seems that it is not so strongly represented in the current Dutch housing market, political and social agenda. It is almost impossible for many households, especially for the low- and middle-income group, to obtain affordable housing, let alone get a home to their liking, decorate and give it identity. According to Bosman (2007), people not only want to decorate rooms according to their own tastes, needs and preferences, but also want to influence the floor plan.

In 2017, I had to buy a house because I couldn't get a social rented dwelling because of the long waiting list in Amsterdam. Existing owner-occupied homes have become 17,8 percent more expensive in the past year alone. As such, house prices have risen almost 78 percent in eight years (Eerenbeemt & Frijters, 2021). I was able to buy a house just before the sharp rise in prices. The housing market became less affordable for the low and middle income group. The high market prices demotivated my many friends to buy a house, many of them were overbid by tens of thousands of euros during the buying process. I had to overbid by 25 thousand euros, reaching my maximum mortgage limit. Overbidding makes prices unstable and unaffordable (*Overbieden is de norm geworden, overal en met hogere bedragen dan ooit*, 2021). My friends are still living as sub-tenants and have little say about their dwelling. Getting a social rental house is out of the question because the current waiting time is 13 years. The young starters, who fall under the low or middle income class, cannot find housing to their liking and financial capacity. These live either in small, old social or expensive free-sector homes. Because of the low incomes and rules surrounding rental housing, tenants are unable to fully meet their housing needs and are left with very little money from their budget (*luidt noodklok: kwart van de huurders zit financieel klem*, 2022). For many, renovations and furnishing according to their wishes is not an option. This has a major impact on the quality of life and housing.

Housing typologies in different parts of the world, the courtyard houses in Anatolia, the atrium houses in the Middle East and haveli's in India are based on collective living; housing multiple families and households and sharing spaces and amenities. These housing typologies and housing forms always attracted me. They look like full-sized houses that have various functions so that each inhabitants can find all the necessities within the walls. From private to collective, from recreation to storage, all types of spaces and functions are located in one building.

In the countryside in Turkey, my family members live with several households in large village houses with their own courtyard, large kitchen, several private bathrooms and a spacious terrace where tea is drunk in the evening. The inhabitants of these homes are usually the faithful children who, with their own "established" family, reside in the same residence as their parents, brothers and sisters. Over time, the house has several households. By adding or changing additional space, each household gets its own private space. The shared spaces, especially the living room, garden or terrace, are the spaces where the residents gather together and spend time.

I wondered whether this form of housing could provide an attractive solution for the solos and couples with low or middle income who have difficulties by finding an affordable house that fulfills their living needs. Rising housing prices can work as an incentive to choose the affordable collective form of residence. By creating attractive shared and collective spaces, residents also gain opportunities to socialize and form a community where they feel at home.

Aim

The aim of this research is to understand the co-housing typology and the use of diverse private, collective and public spaces in a community building. The relationship between these spaces, characteristics and form of ownership in the co-housing are important elements that need to be understood in order to implement this new form of housing in the Netherlands. The collective housing form will be realized through cooperative living to support the financial capacity of the future residents. The evaluation will lead to a residential building that offers the possibility of creating shared housing in Rotterdam Blijdorp for the target groups with low and middle incomes.

In the hybrid residential complex, I will program both, private and collective/cluster houses with dwellings for solos and couples. With this, I want to realize various living spaces that each can attract a target group. The binding elements are the collective and shared spaces that complement the individual living units. The shared spaces are used by the residents of the same cluster houses and collective spaces in the building by all residents of the complex. This research will study private, collective and public spaces in co-housing. The housing and space typologies and programming will be mapped. The key elements obtained from the research will serve as building blocks for my design in Blijdorp. Because, the design is a part of the master plan, the accessibility of collective and public spaces in the building to the public will also be included.

Hypothesis

This research will test the following hypothesis of validity: a hybrid residential complex with private and collective living driven by a cooperative will introduce and provide a new and affordable housing form in Rotterdam Blijdorp with a view to shared spaces for both residents and public who will strengthen interaction, connection with the dwelling and social cohesion.

A.III Research & sub-questions

In order to resolve these above-mentioned problems, a research question has been prepared that will minimize the problem. The research question: *"How can the programming of collective and shared spaces in co-housing enhance interaction and social cohesion among the residents from different social and economic backgrounds?"*. In support of this research question, the following sub-questions are introduced per chapter, chapter 1: *"What are the housing needs of the target groups?"*, *"What are the causes of market speculation that increase housing needs for the target groups?"*, *"What are the financial, fiscal and legal opportunities in the Dutch housing market for cooperatives to solve housing needs among the target groups?"*. Chapter 2: *"What are the spatial characteristics of a community building?"*, *"How do the collective spaces form the programming of co-living?"*, *"How are the programming of collective spaces used to strengthen the social cohesion?"*. Chapter 3: *"What are the possibilities in programming of collective space to create cluster units with shared and private facilities?"*

A.IV Target groups

In this study, the young single person and couples with low or middle income were chosen as target groups. These target groups are characterized by the fact that they make up the majority of "starter" who want to own their own home as desired for the first time and are experiencing problems in affordability. The low-income single person (solo) and low-/middle-income couples are identified as vulnerable target groups in this study because, given their financial status, they are in a poor position in the housing market and experience the most difficulties while seeking for an affordable house according to their housing needs. (Rijksoverheid, 2018). The low-income solos are single earners whose income entitles them to social housing but they do not get it due to long waiting lists. This target group is not allowed to the free-sector rental housing because their monthly income is low to be eligible and the rents in the private sector are too high for them. The couples are one or two earners with low or middle income. Couples with low income share the same lot as the solos with low income. It is even more difficult for the middle income earners because they earn just too much to qualify for social housing. For the free sector, they earn just not enough or have to pay too much rent leaving no money for other private expenses (Boelhouwer & Schiffer, 2016). These target groups, singles and couples entering the housing market for the first time are the "starters" who fall between the cracks. They either struggle to qualify for social housing or pay high rents if they are allowed to enter the private sector.

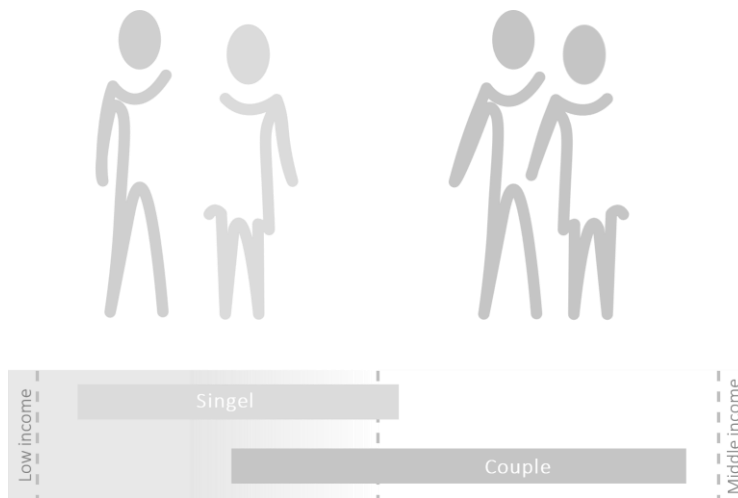


Figure 3 . Target groups

B. Research framework

B.1 Methodology & Research plan structure

This research will look at the potential of a hybrid housing complex in which both the collective and private housing forms are used. This hybrid housing complex will be realized in Rotterdam Blijdorp as new housing units that can offer housing to the previously introduced target groups. Furthermore, by means of architectural articulations, this research will investigate and study the shared and private life in one building. Instead of densification by realizing more housing units, which offers less room for collectivity, this research will look for alternatives where residents can live together. Densification creates more housing units, each with the same type of spaces and facilities. Residents will each have smaller private spaces. Co-housing is more about a fair distribution and accessibility of functions. Thus each resident gets less private facilities, which do get larger, and more large collective spaces. Instead of each having a small living room, residents get access to one large living room. The small private bedrooms become larger because other functions are moved to collective spaces.

To conduct this research, the research question, *"How can the programming of collective and shared spaces in co-housing enhance interaction and social cohesion among the residents from different social and economic backgrounds?"*, will be central. Through different studies and sub-questions, the main research question will be further studied and substantiated. This research studies to what extent a hybrid housing complex with both cluster and private housing can be influential in housing the discussed target groups who cannot find affordable housing to their liking. Furthermore, this research also represents how shared and collective spaces enhance interaction and social cohesion among residents of different income groups and household compositions.

In the first chapter, the housing requirements of the target groups will be examined by means of literature studies of the field studies previously acquired. This is used to identify housing requirements and requirements so that it can be oriented as to whether these households can live in shared living climates. Furthermore, the current problems will be studied from a social, political and economic point of view. By means of literature studies and statistics, we will look at the causes of housing distress in affordable housing among the target groups. Finally, this chapter will study and substantiate the financial, tax and legal possibilities in the Dutch housing market for cooperatives. By investigating this, the sources of problems and possible solutions are mapped.

In the second chapter the characteristics and spatial qualities of community buildings will be investigated and studied. The research will focus on shared/collective, and public spaces. By means of the 4 case studies (La Borda, Lacol arquitectura cooperativa, Barcelona - WagnisART, bogevischs buero architekten stadtplaner GmbH + SHAG Schindler Hable, München - Mehr als Wohnen (house A), Duplex Architekten, Zürich - Kalkbreite, Müller Sigrist Architekten, Zurich) and 4 main criteria for housing analysis (1- Dwelling typologies. 2- Private, collective, public and semi-public/ semi-private areas. 3- Places or elements in the building that contribute to the production of collectivity. 4- Circulation/movement inside the building) the characteristics of collective spaces in the community building will be examined per criteria. Analysis

drawings will find out the characteristics so that they are later used in the research and design. In addition, this chapter will examine how the programming and establishment of collective spaces can strengthen and guarantee the interaction between residents and social cohesion. The knowledge gained from the previously named fragment in the same chapter and comparison with the literature research will answer the sub research question by criteria. The literature research is used here as an argument and/or justification of the case study analyzes.

The third chapter consists of applying the results from the analyzes in chapter 1 and 2. With the knowledge gained earlier on the wishes of the target groups as a starting point, experiments will be carried out with various wide-ranging typologies. This gives the study more insight into the design. It will be studied to what extent various housing typologies can be programmed in the same cluster house by using shared spaces. The degree of cohabitation will be leading and will shape the cluster house. The collective and public spaces together with the cluster houses will determine the planning of the building envelope.

Finally, the conclusion will answer the main research question: *“How can the programming of collective and shared spaces in co-housing enhance interaction and social cohesion among the residents from different social and economic backgrounds?”*, by merging and concluding elements and results from chapter 2 and 3. Because the graduation studio Advanced Housing Design is inextricably linked and runs together with this research, the relationship of this research to the design will be argued and how the design will be further shaped from the results of this research.

During the research and design process, I used the graphic novel. By imagining a story of a future resident looking for affordable housing, I came across key concerns and moments that shaped my research and design. In the story I am the designer and Lucas the future resident of the residential complex. The graphic novel has served as a guide that has helped me to make choices. By imagining a life for Lucas, I found possible problems, scenarios and solutions.

Research plan structure

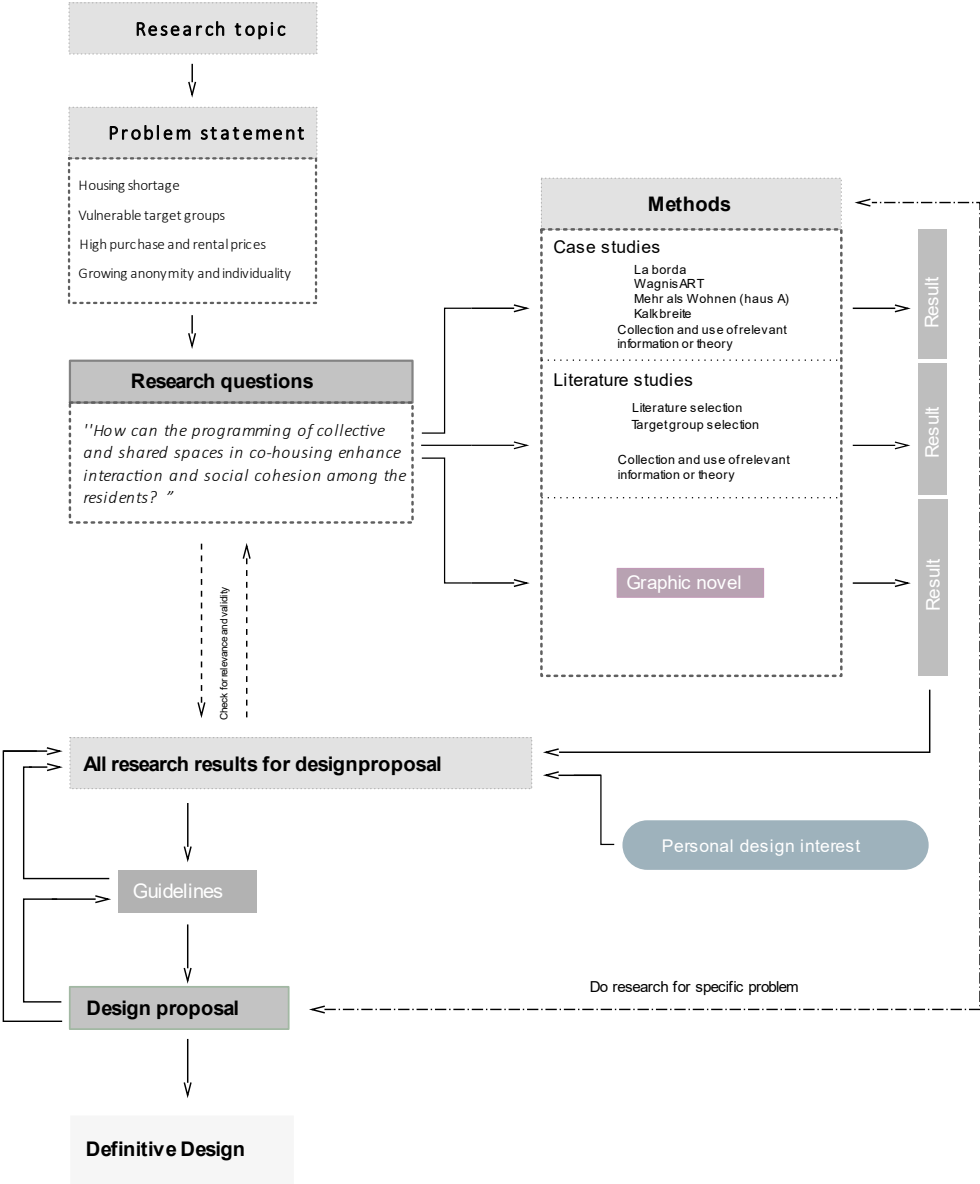


figure 4. Research plan structure

B.II Case studies



Project: La Borda
Architects: Lacol
Year of construction: 2018
Location: Barcelona, Spain
Area: 3000m²
Dwelling units: 28
Number of residents: -



Project: WagnisART,
Architects: ARGE bogevischs buero architekten & stadtplaner GmbH mit SHAG Schindler Hable Architekten GbR
Year of construction: 2016
Location: Munich, Germany
Area: 20275m²
Dwelling units: 138
Number of residents: 320



Project: Mehr als Wohnen (Haus A)
Architects: Duplex Architekten
Year of construction: 2015
Location: Zurich, Switzerland
Area: 40.000m² (6.883)
Dwelling units: total 400
Number of residents: 1200



Project: Kalkbreite
Architects: Müller Sigrist Architekten
Year of construction: 2014
Location: Zurich, Switzerland
Area: 6350m²
Dwelling units: 93
Number of residents: 250

1. Co-living

1.1 Housing wishes target groups

The single-person household and couples

The single households, or the solo and married or cohabiting couples, consist of one or two persons with the age between 18 and 35 years. Within these two target groups there are different ages, education levels and incomes. As mentioned earlier, the low and middle-income class has been chosen as a future housing profile in this study.

The housing wishes and requirements of the two target groups are very similar. The single person is a single earner and has a relatively low income compared to the married or cohabiting couple. These are often two earners with a higher income than the solo. The Ministry of Housing, Spatial Planning and the Environment (VROM) (2009) found that the primary requirement for these target groups should be cheap housing. A rental home is more suitable for these target groups. With the rental property, costs such as maintenance, insurance and risks are transferred to the home owner, the tenant pays a minimum monthly contribution (Blijie et al., 2009). Because the wishes and financial possibilities may change in the coming years, these target groups prefer to rent an apartment. The study by Dopper and Geuting (2018) shows that couples are willing to pay a little more for a larger living space up to 50 square meters. They are less open to (new) social contacts and the sharing of facilities compared to singles.

For young singles and couples the apartment are affordable. The requirements for housing are based on income for these target groups. This means that there are no specific requirements for the size of the rooms. If there is an option to choose, private sanitary facilities are required (Blijie et al., 2009). According to the report by Alvez (2015), the singles are used to being alone and also like to be able to retire to their own private home. The living room and bedroom is therefore the favorite places in the house to enjoy private time. According to Alvez, this target group also attaches great importance to a quiet and large bedroom, so the presence of a storage space is also appreciated. Because singles usually sleep in a double bed means that the size of the bedroom of a solo oven is much desired as for the couple. The bathroom and kitchen are for these target groups facilities they are most dissatisfied with. The bathroom is often referred to as an old and dark room where the presence of the washing machine is not appreciated (Alvez, 2015). In the research of Daalman et al. (2014) and Dopper and Geuting (2018) it can be seen that single households and couples consider their own kitchen very important. Because these target groups are often associated with homes where facilities are shared, they also want access to more private. The kitchens in their private homes can be furnished in a more modern way and do not have to be too large. The research showed that solos preferably only eat on the couch. On occasions with guests they sit at the table as well as the couples. There is little data available for sharing a common kitchen. In the study by Dopper and Geuting (2018) it is clear that single households with a relatively low budget are prepared to provide their living space in exchange for lower rental costs. An affordable studio of 30 square meters on average with shared facilities and common meeting places, such as a kitchen or outdoor space is accepted. The outdoor space is a necessary facility for these target groups. Free view is very popular, but even if there

is no nice view you want a balcony or garden. The singles and couples use the outdoor space to relax, eat and drink and hang up the laundry (Alvez, 2015).

For the location of the house, the single person looks at a cozy neighborhood where social contacts can be strengthened. For the couples the same applies, for their careers, social life and amenities they choose for urban life. For the most part, these target groups spend their time outside the home and therefore require a lot of attention to quality facilities where they can recreate (Blijie et al., 2009). According to the research by Dopper and Geuting (2018), single people share the need for social contacts in shared meeting places around their home. This would mean that they can live well together in a complex with shared spaces. For public facilities, the single person and couple do not necessarily have to be in the immediate vicinity of the home because these households do not have strict requirements to travel for recreation, the proximity of these public facilities is appreciated.

1.2 Housing shortage for the target groups and cooperative housing as solution

What are the causes of market speculation that increase housing needs for the target groups?

Several changes are occurring in the Dutch housing stock. The private rental sector is growing, the social rental sector is shrinking and the owner-occupied sector is becoming less affordable for many (Aalbers et al., 2018). The problems to housing sector in the current housing market are called as housing crisis or housing emergency. The shortage of housing is hit hardest by middle-income households. Existing housing stock for these income classes is becoming unaffordable due to the strict allocation standards for social rent. The social rental housing is only intended for the very lowest incomes and even for them long waiting times apply. The social rental sector is a point of contact for the low income class. The young single person looking for a home is stuck with the number of waiting years that apply to social housing corporations. In cities such as Rotterdam, the waiting time for a social rental house runs up to 5 years and in Amsterdam it runs up to 13 years (Damen et al., 2020; Wittkämper & Kromhout, 2020).

Also, the supply of mid-rental housing has remained limited due to rising housing costs. The cause of this increase is due to rising construction, material and expense costs. The high demand and low supply give an additional booster to the rise in housing prices. The government has left the free rental sector to the commercial market who are also moving with the rising prices. However, the problem is that these parties do not have 'affordability' as their (primary) goal. They invest their money in housing and want to get high profit out of it. A logical consequence of market forces in the middle rental segment, but this leaves low middle income households out of the picture. Starting rents for the free sector in scarce areas are around 1,000 euros. Only those households that can (just) pay the higher rents are eligible for these properties. (De Groot & Spiegelaar, 2019). Commercial landlords in the free sector are quick to take advantage of the potential opportunities and allow rents to rise and impose high income requirements. Because the government has no strict rules surrounding free sector rent, commercial parties can operate separately from the social rental housing sector. Housing is also regularly given away outside of the housing distribution system. Together, these aspects reduce the affordability and accessibility of medium sized rental housing for the (low) middle income groups. Not only for the households themselves, but also for the composition of the liveability in

neighborhoods and cities where teachers, nurses or police officers can no longer find a home (Rob Haans, 2020).

The owner-occupied sector has been a fallback option for middle-income home seekers for a long period of time (Buitelaar et al., 2021). Prices of owner-occupied housing are strongly influenced by the borrowing and financing capacity of buyers. This depends on household income, but is also determined by the level of mortgage interest rates, mortgage standards and tax rules (Gopal et al., 2021). For owner-occupied housing, mortgage standards have been tightened, stricter lending standards demanded and low mortgage rates introduced. The low mortgage rates have stimulated many home seekers and investors, causing demand to exceed supply. This reduction suggests in real terms that the amount of the mortgage has increased (Lejour, 2016). Rising prices in the owner-occupied housing sector have attracted both domestic and foreign investors. Making money in a short period of time has put faster pressure on the housing stock, creating a climate of chaos. Investors investing in owner-occupied housing to re-let at high prices, the growth of free-sector rentals, has a negative impact on the affordability of owner-occupied housing in the future. Private investors are competing with owner-occupiers and move-up buyers. In 2017, in 7.1 percent of housing transactions, the buyer was a private investor. These have paid more on average for a home in recent years than first-time buyers and those moving on for similar homes (Buitelaar et al., 2021).

What are the financial, fiscal and legal opportunities in the Dutch market for coöperaties to solve housing needs among target groups?

Cooperative initiatives serve as a possible solution to the current housing shortage, which is related both to low and middle income singles and couples. These initiatives aim to reduce the cost of building and rent/purchase by programming the shared housing. In a housing cooperative, residents unite with the goal of realizing affordable housing without being influenced by market speculation. In the Netherlands, the capital city of Amsterdam is the leading provider of attraction for cooperatives homes. Even in 2040, the municipality wants 10% of the housing stock to be made up of housing cooperatives, a form of collective living. These are 40.000 houses, half of which must be social rent and the other half expensive housing (Het Parool, 2019).

The cooperatives work for housing affordability, and the municipality argues that this is particularly appealing to for low- and middle-income groups over the long period of time. Many cooperative projects have been realized in Europe. These are mainly in Germany, Switzerland and Scandinavia. In this research, case studies from European countries were chosen including the countries mentioned. In the Netherlands, the cooperatives are not well known yet. During the crisis that hit the housing market hard, several cooperative initiatives quickly presented themselves in 2011 to address the "affordable housing shortage" among the vulnerable target groups. Commercial parties did not dare to build, social parties did not have the money anymore. For the (lower) middle income groups, the system was completely stuck. At the same time, the government was preparing measures to restructure the social rental sector, with major consequences for tenants. In the Netherlands, cooperative initiatives were previously offered to counter the affordable housing shortage among the low and middle income groups. Especially the middle-income earners who are not entitled to social housing and do not meet the requirements of the free sector face the most problems for housing. While all the market players do nothing to solve this problem, initiatives are emerging from private individuals who seek a way out themselves, using the cooperative as a tool (Van der Meer & Lupi, 2015). This model has been used more

often to provide housing for low and middle income groups. In the Netherlands, these cooperatives must try to nestle in a free housing market in which they must compete with other forms of ownership.

Because housing cooperatives are financially and socially an unknown housing form in the Netherlands, it is still difficult for initiatives to enter the market. In Switzerland, housing cooperatives are based on shares that must be purchased by members. There is also a system of loans without interest and subsidies in which even pension funds participate. This produces affordable housing by Swiss standards with rent based on cost (Karataş, 2018). By decoupling the market logic in the Netherlands, cooperatives can contribute to the affordability of housing for the low- and middle-income target groups. The current market logic for rents is calculated according to the point system which includes the WOZ value of the entire neighborhood. To make rents more affordable for target groups, cooperatives must deviate from this system. The monthly rent/cost should be independent of the market or land prices. Furthermore, limits should be set on profit distribution leading to more focus on user value of housing rather than economic value.

Municipality

For cooperative initiatives, the government can use many instruments to stimulate and facilitate this model of housing. Through specific legislation, additional guidelines and regulations aimed at housing cooperatives, this model will be legally incorporated and recognized. By labeling or reserving land for allocation to housing cooperatives in the zoning plans so that there can be no speculation or unfair competition with other market parties, for example, setting up ground lease conditions for developers where the land must be realized for a certain percentage by a cooperative. Municipalities can also issue land on a long lease with restrictive conditions so that the affordability of the housing is protected in the long term. Subsidies from local and national governments will provide financial support for the cooperatives. Reducing or exempting the cooperative's income tax, corporation tax and profit tax will reduce expenses which will be offset against the monthly rent. The municipality can provide direct support through interest-free loans or low-interest loans for non-profit cooperative initiatives in the form of bonds. Also, with indirect support by providing financial guarantees for cooperatives' mortgages, the municipality can recognize and support these initiatives.

Financieel

Low- and middle-income housing consumers cannot buy because the banks will not give them a mortgage. In the Netherlands, banks are not quick to give mortgages to collective initiatives because they are officially poorly represented. Cooperatives therefore fall more quickly to other sources of financing such as bonds, foreign loans and crowdfunding (De Gouw et al., 2021). National banks can provide financial support in the form of mortgages and loans with the support of government. Because cooperatives build on mutual solidarity, members are also expected to cover some of the costs through their own contribution. This increases the financing possibilities of the housing cooperative. In some cases, this is also financed through personal loans/mortgages (De Gouw et al., 2021).

2. Community building through collective spaces within cooperative housing

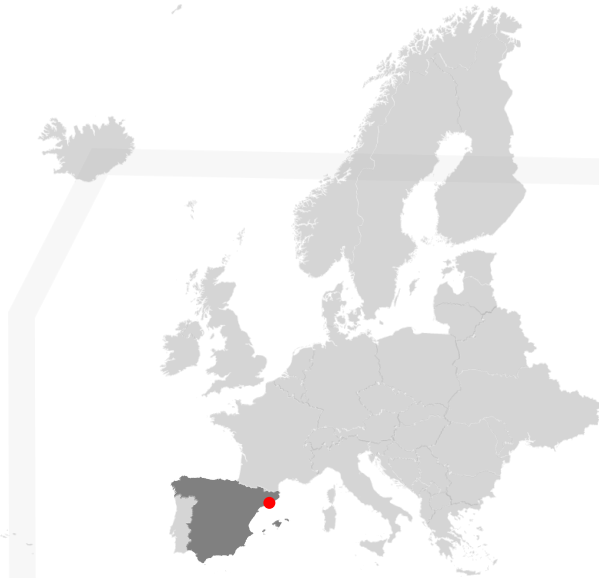
In this chapter, the "community" is used as the research theme. While investigating the research questions, case studies are used and studied on 4 criteria: dwelling typologies; private, collective, public as well as semi-public/ semi-private areas; places or elements in the building that contribute to the production of collectivity and Circulation/movement inside the building. The following sections each discuss a sub-research question that is part of the community theme. Through the 4 case studies (La Borda, WagnisART, Kalkbreite and Mehr als Wohnen) the research will be substantiated.

2.1 Characteristics of a Community building

"What are the spatial characteristics of a community building?"

In the Cambridge University dictionary, community is defined as following: "The people living in one particular area or people who are considered as a unit because of their common interests, social group, or nationality" (Cambridge University, 2022). According to Professor Dr. Virginie Cobigo and Dr. Lynn Martin, the term has the following definition: "A community is a group of people that interact and support each other, and are bounded by shared experiences or characteristics, a sense of belonging, and often by their physical proximity" (Cobigo et al, 2016, p. 192). The difference between the two definitions is the addition and value of location. The Cambridge Universities definition emphasizes location as an important feature while Dr. Virginie Cobigo and Dr. Lynn Martin use the relationship between people in a group as the main principle. For this research, the location, the building, has great value. The residential building, cluster housing, collective and public spaces, should give the sense of belonging and feeling of mutual support to the neighbors/resident, who share the same spaces. Here, different social groups and nationalities will share the same common interest and economic goal, living affordably in a residential building in which residents form a "community" to be for each other so that the livability and attractiveness of the residential environment is enhanced. The International examples show characteristic features that are different or absent in the known traditional housing typologies. There now follows the examination of the 4 case studies on characteristic and spatial features of a community building.

Case: La Borda



In 2012, the process for the housing initiative, La Borda, began from a group of households in Barcelona to challenge the growing housing shortage in Spain. La Borda is a cooperative housing project that was finalized in 2018 with the motivation affordable housing. The cooperative of architects Lacol has been involved in the project since the beginning of the initiative. The 3,000 square meter housing complex consists of a 7 story block with 28 private residences each of which has its own sanitary facilities and kitchen.

Dwelling typologies, private and shared space in the house

La Borda used modules with standard sizes (figure 6). The size and number of spaces is determined by different combinations of these modules, the houses have standard sizes which offers more justice between the residents. The efficiency in construction costs, sustainability, minimal space and flexibility in construction offers the users low costs and user flexibility for in the future. La Borda could be disassembled and moved, so to speak. The use of modules in wood offers flexibility for modifications and renovation, for example, a house would be reduced or enlarged as desired by adding or closing modules.

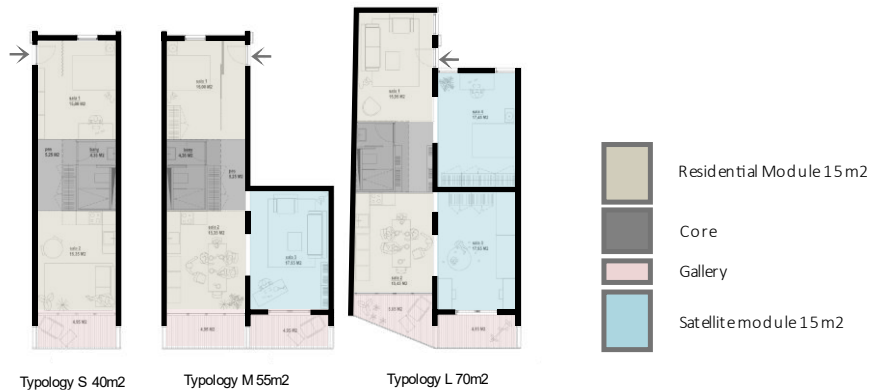


figure 5. Housing typology structure

The homes of La Borda are self-sufficient. The homes consist of modular units that can be divided by function such as living space and bedrooms (figure 6). Each house has its own private sanitary facilities such as toilet and shower. In addition to the shared kitchen on the first floor, each unit also has its own kitchenette. This offers opportunities for residents to cook in their own home and for large groups, the shared kitchen is accessible for every resident. The homes themselves do not have any shared spaces that are accessible to other residents. This gives the form of living in La Borda more of a private character like the traditional apartment.

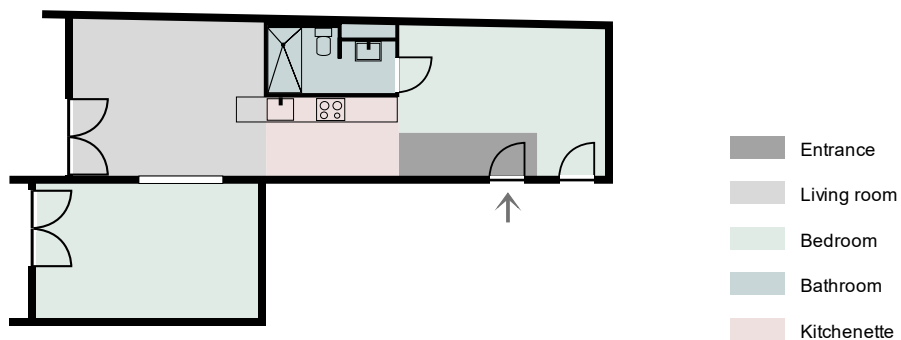


figure 6. Floorplan dwelling

Collective spaces outside the house

The residential units are placed around the atrium. The courtyard is covered by a polycarbonate roof that captures heat from the sun in the winter and provides ventilation in the summer. This characterizes the atrium and the galleries around it more as collective interior spaces (figure 7). By covering the roof of the atrium, residents can make more use of this space on rainy and even colder days. The indoor climate remains stable and dry allowing the galleries to be used for meetings and recreation. The central courtyard concentrates circulation to all residences and shared spaces on the different floors. On the first floor there are collective spaces such as a large kitchen and dining room for large meals or meetings, health/care space, guest rooms, laundry, bicycle storage and a multipurpose room. On the second floors, the gallery is deepened into a collective space with a high ceiling. This space is not shielded by walls and can be freely used by residents for various activities. On the roof of the building is the roof terrace where metal profiles have been placed that can be used multifunctionally (figure 8). Residents can dry their clothes here, place swings for the children or place garden furniture and use it as a recreation and socialization space. The presence of these shared spaces enhance collectivity and develop the sense of community.

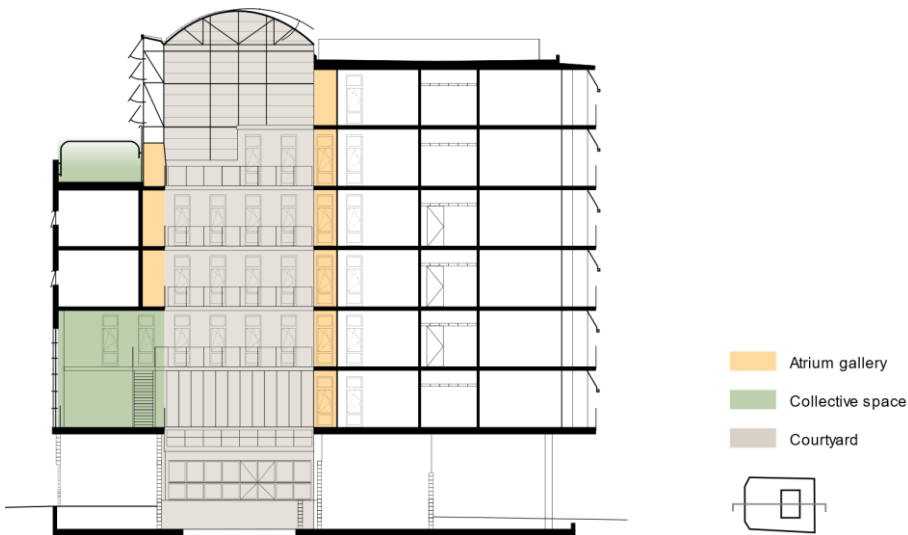


figure 7. Section of La Borda,



figure 8. Communal space
first floor and roof terrace

Circulation and connection between private and collective spaces

A characteristic feature of a community building is connectivity and circulation. With the presence of collective spaces for residents, accessibility to these spaces should be easy. La Borda has an orderly circulation and access program. The building is accessed by a central stairwell to the west. Residences on each floor are accessed by a gallery surrounding the atrium (figure 9 and 10). The stairwell provides the vertical traffic through the building and the galleries on each floor the horizontal traffic (Figure X). The gallery and collective space on the second floor are fused together. There is no hard separation between traffic and recreation space. Also, the sunken spaces in front of the housing unit entrances are used as private spaces where residents put their own stuff, shoe rack, chair or plants. Circulation is part of shared spaces in La Borda.

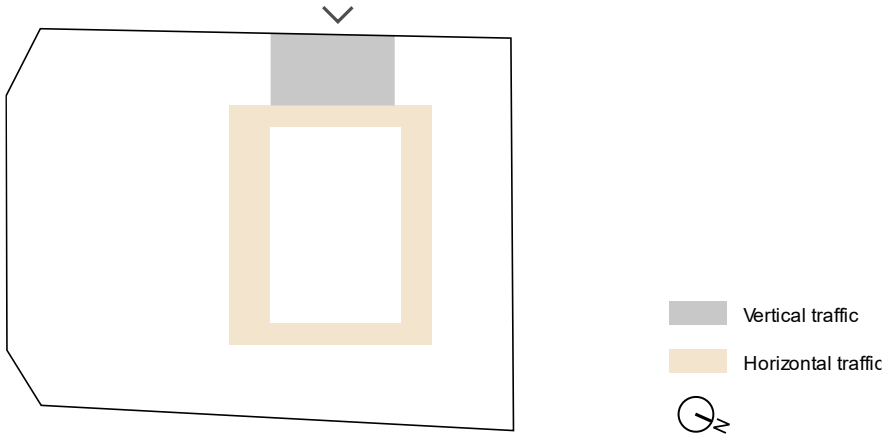


figure 9. Traffic analysis

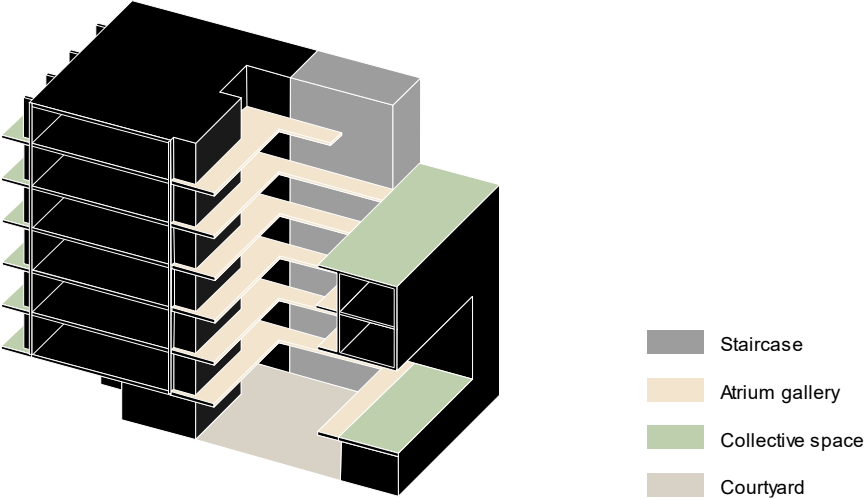


figure 10. Axonometric cross-section of traffic space

Case: WagnisArt



WagnisART is a cooperative housing project developed in Munich by cooperative Wagnis eG and designed by ARGE bogevischs buero architekten & stadtplaner GmbH mit SHAG Schindler Hable Architekten GbR,. The scale of the project is on an urban level and consists of 5 detached residential blocks connected by bridges that connect the buildings.

Dwelling typologies, private and shared space in the house

The building typology consists of a stairwell, collective space/circulation area and cluster housing around this space. The housing units are designed in the form of cluster housing. Each cluster house has common facilities that are used by the residents of the housing units in the same cluster house. Each housing unit in the cluster housing is equipped with its own sanitary facilities such as shower and toilet (figure 11). Furthermore, the living units in the cluster homes have either a separate bedroom or space that can be divided into living room and bedroom. In addition to the private living space, each cluster housing unit has a shared living room with kitchenette that is for the use of the residents of the housing units. Some of the housing units are large enough to accommodate a household with children. The WagnisART also offers suitable living space for singles and couples. The right-hand plan in figure 12 is the smallest building suitable for small households such as singles. Each of these housing units has up to two rooms. For the cluster housing units in WagnisArt, the shared spaces and facilities in the cluster housing units are very important. Some living units that consist of one room do not provide enough space to sit extensively when there are visitors. Also, not every living unit has its own kitchenette which makes the shared space and facilities important to complement the private living units.



figure 11. Floorplan analysis cluster housing with private housing units



figure 12. Floorplan different buildings with collective program

Collective spaces outside the house

On the first floor, two large open spaces are located between the 5 residential blocks. These spaces form the public courtyard of the design. The open courtyard is a collective space for the residents with green areas, bicycle storage, play, recreation and meeting area for children and parents. Although this place is for collective use among the residents, this space is not shielded and therefore also publicly accessible. The bridges that connect the residential blocks offer semi-public connecting spaces between the buildings. These spaces are used as roof terraces and circulation spaces. The roof terraces on different floors and sizes are the part of common open spaces for the residents (figure 13). Furthermore, other collective and public facilities are programmed on the first floor of the blocks (figure 14). These are studios, workshops, event center, restaurant, guest apartments, laundry room and business spaces.

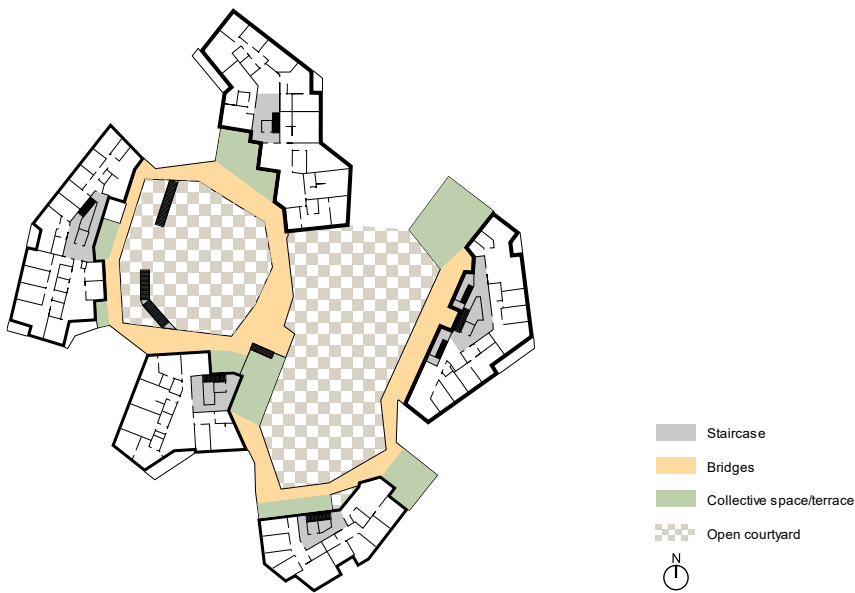
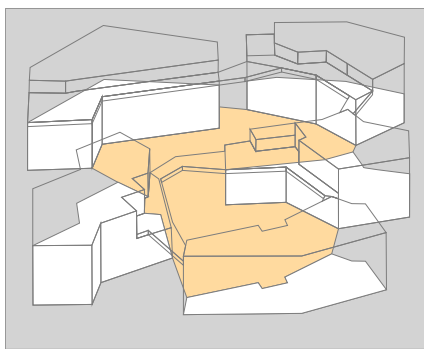
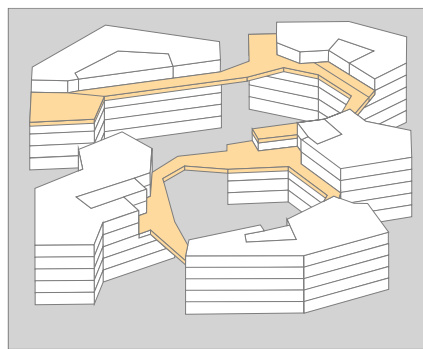


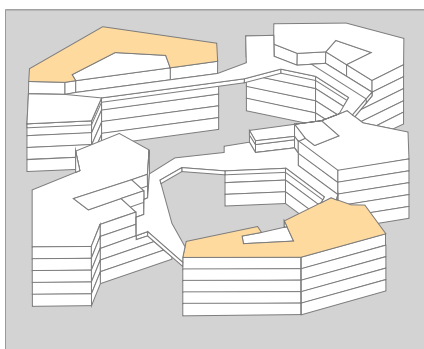
figure 13. Floorplan
WagnisArt, collective spaces



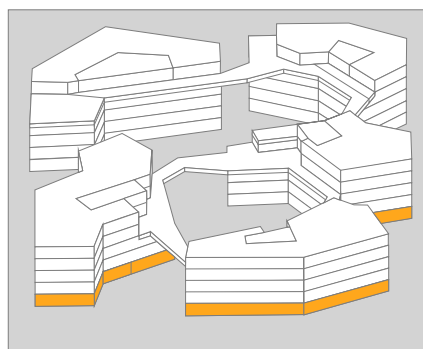
Courtyard



Terraces



Roof garden



Public functions

figure 14. Collective outdoor space and public functions

Circulation and connection between private and collective spaces

WahnisArt has several traffic circulations. Each residential block is equipped with a stairwell that accesses the residences on the floors. In addition to the stairwells, the individual residential blocks are connected by bridges (figure 15). On the fourth floor, wide concrete bridges stretch between the residential blocks. The characteristic bridges not only serve for circulation and access to the dwellings, but also as collective recreational areas. The important thing about the bridges is that, apart from the connection to the residential blocks, they each lead to or along a collective terrace. The bridges can be reached through the open courtyard by means of external stairs. Thus, the bridges can also be seen as semi-public space. Not only residents of WahnisART, but also local residents can make use of these spaces.

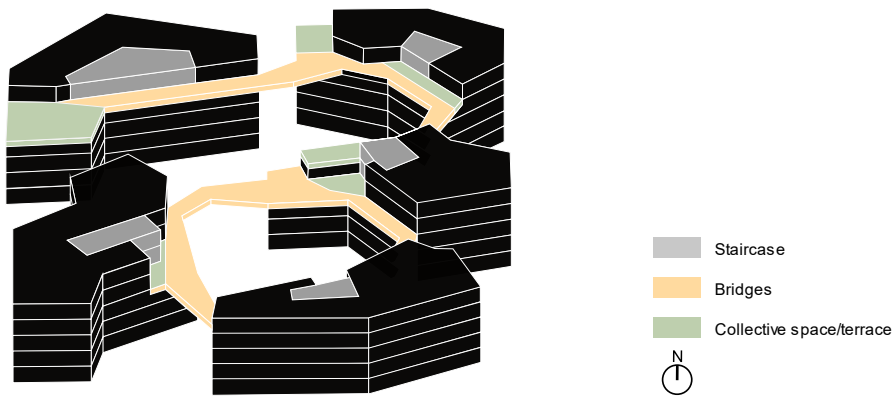


figure 15. Connection and collective space

Case: Kalkbreite



The City of Zurich, the Zurich Public Transport Company, the Karthago and Dreieck cooperative societies and 50 local residents jointly developed Kalkbreite, which was designed by Müller Sigrist Architects. The residential building is built above the streetcar depot of the city of Zurich and has a total of 93 residential units including cluster and private residences. The kalkbreite has a public and commercial plinth that facilitates different functions. For example, the ground, 1st and 2nd floors are publicly accessible. The residences are located from the 3rd floor onwards, which is a hard division between private (residences) and public (street level). However, the courtyard, which sits on the roof of the streetcar depot, is accessible to the public. This is a collective garden of approximately 2500 square meters that is accessible to both residents and visitors.

Dwelling typologie, private and shared space in the house

Kalkbreite has several housing typologies. Both private and communal housing units, the cluster housing. Cluster homes consist of private living units, shared spaces such as a kitchen and bathroom. The units themselves come with their own kitchenette and bathroom. This also allows for private living in a cluster home if the resident feels the need (figure 16). Thus, a resident can always retire to his/her private residence without being disturbed by his/her fellow residents. The individual facilities in the individual living units in cluster homes make living less dependent on communal facilities. The units in cluster homes have a minimum area of 27 square meters and a maximum of 50 square meters. The smallest unit is just enough for a single person and for a couple the space is quickly cramped. The larger units (35-50m²) are more suitable for couples and may even have several separate rooms such as a living room and bedroom. Small households such as singles and couples use these units. For large families with children, there are larger cluster homes the "Grosshaushalt". These consist of living units without their own kitchen with several bedrooms and bathroom. The common facilities are the living and dining area and a professional kitchen with cooks. Other residents of the Kalkbreite can also use these kitchens to take away food.

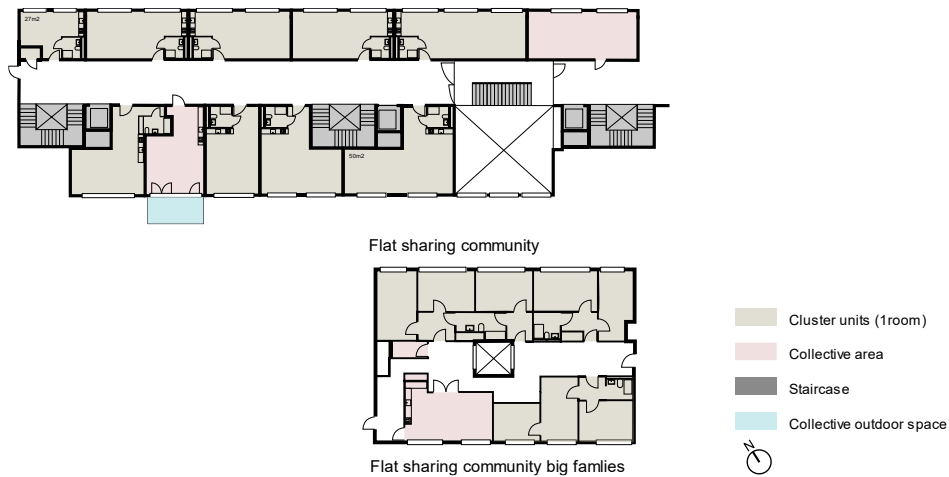


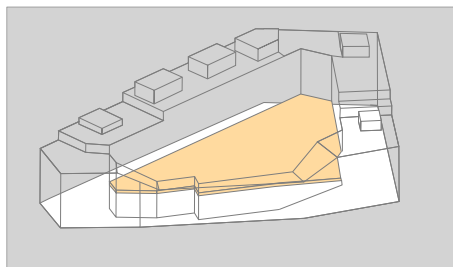
figure 16. Floorplan cluster house

Collective spaces outside the house

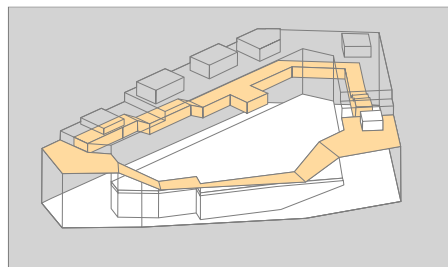
In addition to the communal spaces in the cluster homes, there are other spaces outside the homes that are used by all residents of Kalkbreite. On the third floor is a large 2,500 square foot courtyard. This semi-public courtyard that serves as a roof garden is freely accessible to both residents and the public. Through the roof garden, a cafeteria can be reached in the building. This is collective café that is also accessible to visitors. Also through the courtyard there is a walking route with several roof terraces and gardens to use for residents and public (figure 18). In addition, outside the apartments, there are laundry rooms, free spaces and work areas available for collective use by the residents (figure 17). For the public, the plinth of Kalkbreite contains stores, restaurants, a cinema, a doctor's practice, offices and a daycare.



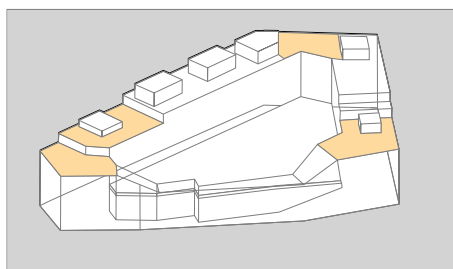
figure 17. Floorplan collective and public functions



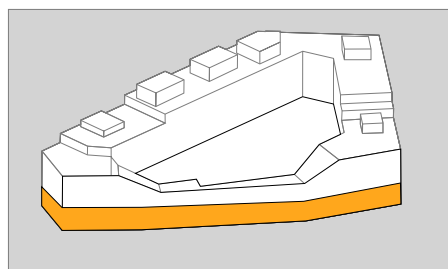
Courtyard



Roof semi-public circulation



Roof garden/terraces



Public functions

figure 18. Collective outdoor space and public functions

Circulation and connection between private and collective spaces

The circulation and connection network in kalkbreite consists of a complex system of long corridors, stairwells and external stairs (figure 19). The building is accessed by 7 stairwells, each leading to a section of the building. For example, the stairwell at the south is dedicated to private residences while the northern stairwells pass through different residential typologies (figure 20). The main entrance hall is accessed from the large staircase connecting the roof garden to the street. The cluster homes with the common areas are accessed by a long corridor that connects different floors. The beginning of this corridor complex starts at the main entrance hall and continues to the roof terraces. The roof terraces are also connected from the courtyard by a walkway. The circulation spaces, especially the elongated corridors, connect all the common areas. The cluster houses are also connected to each other in series with this. This is the important artery of Kalkbreite. All shared spaces have direct access to the circulation spaces (figure 21).

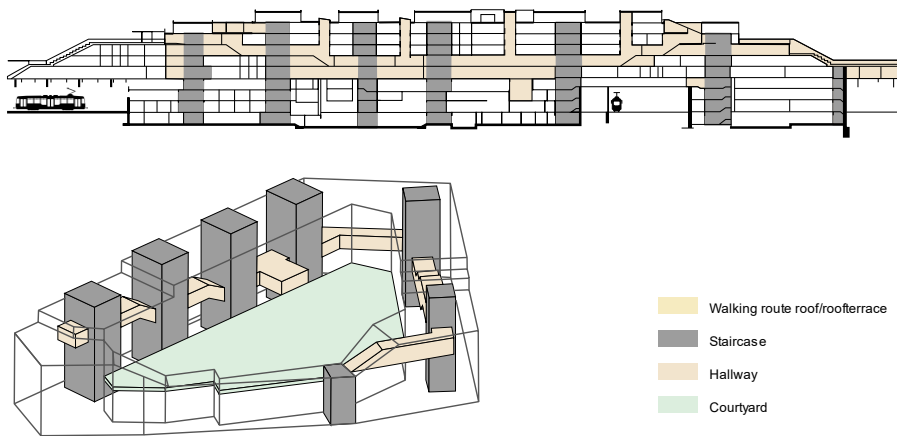


figure 19. Circulation and connection network

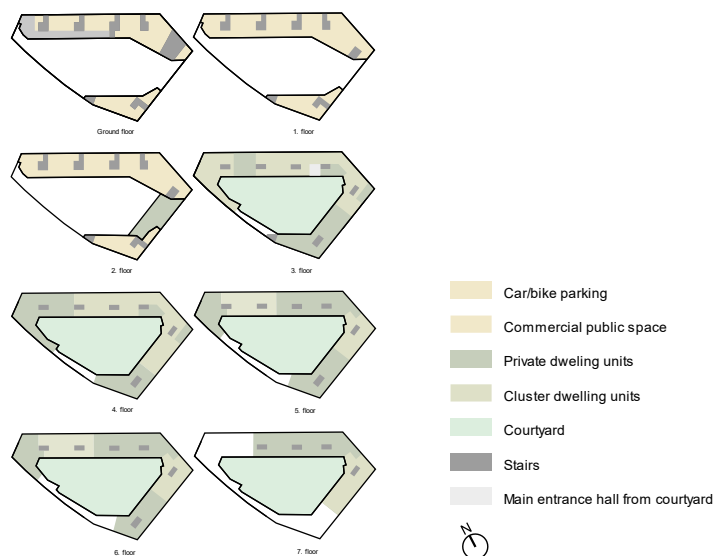


figure 20. Building space program and connection



figure 21. Connection cluster housing with shared space as a circulation network

Case: Mehr als Wohnen



The joint cooperative, Mehr als Wohnen, is formed through merging of 35 smaller existing cooperatives. The cooperatives realized the urban planning project for affordable housing, Hunziker Areal. This is a large area of 40,000 square meters consisting of 13 detached buildings and about 1,200 residents. Duplex Architekten, Futurafrosch, Miroslav Šik, Müller Sigrist Architekten, pool Architekten and Müller Illien Landschaftsarchitekten created the urban plan with 13 residential buildings, hospitality, retail and social functions in the plinths. For this case study, I chose "House A" designed by Duplex Architects.



Dwelling typologie, private and shared space in the house

Block A consists of 6 floors of private living units in 11 cluster housing units with shared facilities. On each floor there are two cluster apartments with 5 or 6 small living units each. These living units are intended for singles or couples without children. For larger families, the units do not offer enough space. Each private living unit is equipped with kitchenette and bathroom. The units consist of 1 room or 2 rooms, in figure 22 two living units are pictured, the more room unit and the studio unit. The entrance to these units is either through a separate hallway or through the large room with kitchenette. It is notable that the kitchenette is directly connected to the entrance to this residential unit.

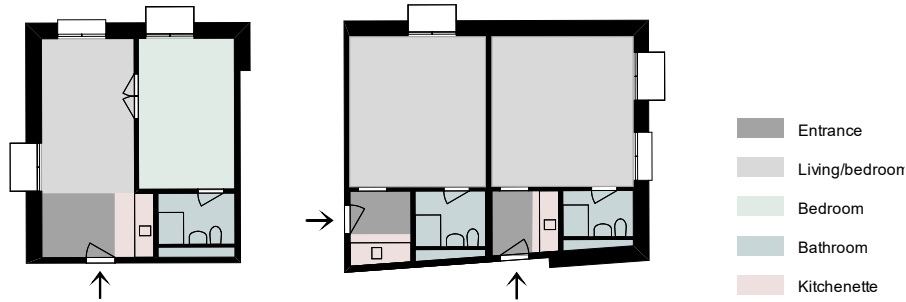


Figure 22. Dwelling typology

In addition to private facilities, the residents of the cluster house share common, loggia, living room, kitchen, dining area, workshop, laundry room and bathroom (figure 23). The residential units appear to be randomly distributed in the block. While the residential block has an organized appearance from the outside, the floor plan is rather chaotic. Common facilities are located between the residential units. Narrow spaces between the units serve more as traffic areas or cozy spaces to unwind or read a book. The larger spaces are used as living rooms, kitchens or dining areas.



Figure 23. Building and space program

Collective spaces outside the house

Haus A is a compact building with two cluster homes each per floor. The building has daycare and special education facilities only on half of the first floor. In the plinths of the other residential blocks in Mehr als Wohnen, there are publicly accessible functions such as cafes and work spaces.

Circulation and connection between private and collective spaces

Access to Block A is via two entrances, east and west, leading to the center of the building via two corridors (figure 24). The space where the central stairs are located are the large vertical circulation spaces in the core that are exposed to daylight through skylights. The vertical circulation spaces separate the residential units into two separate cluster homes on each floor. The stairs are designed as an open staircase within an atrium. The entrance to the cluster housing units opens onto the staircase area in the atrium. From this area, a laundry room is organized for the two cluster homes per floor. The stairwells in the atrium are included as semi-public spaces where residents can meet. Circulation within the cluster homes is through the shared spaces between the private living units. This space serves both as an addition to the residential quality and as a connecting space between facilities residential units.



Figure 24. Building and space program

Figure 25. Building and space program

2.2 Spatial planning and social cohesion

“How are the programming of collective spaces used to strengthen the cohesion?”

Before proceeding with the research, it is important to clarify the definition of social cohesion. Social cohesion is defined as, "Social cohesion refers to the degree of solidarity and connectedness between different groups in the same society" (Manca, 2014). The term social cohesion was first proposed as a policy tool by Judith Maxwell, the founder and former president of the Canadian Policy Research Networks (CPRN). Her proposed definition reads as follows: "Social cohesion involves building shared values and communities of interpretation, reducing disparities in wealth and income, and generally enabling people to have a sense that they are engaged in a common enterprise, facing shared challenges, and that they are members of the same community" (Maxwell, 1996). From the definitions, it can be concluded that engagement, solidarity, reducing inequalities, and community are terms that form the foundation of social cohesion. Architectural articulations cannot make a space vibrant, but accessibility and connectivity can (Tony, 2020). It can be seen from the case study studies that circulation and connection between functions and spaces has a lot of meaning. The feeling of free accessibility at every level gives the occupant/user the impression of acceptance, trust and recognition. Also according to Tony (2020), circulation and connection both increases the chance of social activities and interaction among the residents.

The collective housing model tries to ensure equality among residents through fair distribution of space, no privileges and no discrimination. By reducing inequalities in society such as fair distribution of resources, freedom, common rules and social justice, social cohesion among residents will be strengthened. The goal of collective housing is linked to these motivations, among others, to strengthen and continue the livability of these living environments. According to Kam and Needham (2003), the livability of residential environments is directly linked to social cohesion.

Looking at the case studies, different types of collective spaces and programming of co-housing emerged. Each case processes the collective spaces differently. In La Borda, homes on the first and second floors were removed, freeing up space that has a collective function. This is also the largest collective, free and flexible space in the building where residents can recreate and use for other functions. Furthermore, on the first floor, communal spaces are organized such as laundry rooms, kitchen, dining room and multifunctional rooms. These are spaces that complement the private living units. Furthermore, small cozy spaces have been created in front of the sunken housing entrances. Residents place small tables and chairs here, creating "linger spaces" where neighbors can socialize. This gives residents freedom to arrange and use spaces as they wish without disturbing others. WagnisART and Mehr als Wohnen have a stronger collective infrastructure. The residents of the cluster homes are part of the same "large household."

Each cluster home has collective facilities to which no resident has priority. The communal kitchens and living rooms in these case studies serve as spaces to strengthen and continue the interaction between neighbors. In the Kalkbreite, all residents can use the professional kitchens and cooks in the Grosshaushalt. Residents of these large cluster homes share the facilities of their own home with other residents from other cluster homes. According to Maxwell (1996), giving a sense of belonging and being part of the same community is part of social cohesion. Sharing the same facilities is part of being part of the same community regardless of social and financial differences. Free access to spaces and facilities, strengthens the

involvement of residents in the community. Kalkbreite offers this freedom in the use of space. The circulation that runs along collective spaces emphasizes the accessibility and accessibility of these facilities. The bridges connecting all the residential blocks in Wagnisart serve both as traffic space and recreational space (rooftop terraces). The circulation and recreation space is accessible to every resident. There is no priority or privilege to these spaces, keeping the sense of belonging and acceptance in the community intact.

As this feeling is reinforced by architectural articulation in residential buildings, resident/user interaction will be enhanced. More spatial interaction in the collective living form will lead to more time spent with neighbors. Which reinforces mutual ties and social cohesion.

3. The use of diverse shared space and housing typologies in a new living environment

3.1 Programming of shared, collective, private and public space

"What are the possibilities in programming of collective space to create cluster housing units with shared and private facilities?"

The collective living form is based on various spaces. The programming of these spaces starts with adding function (facilities) and accessibility to use space and facilities (shielding). The difference between shared spaces within a cluster housing, collective and public spaces in the building differ in the degree of accessibility and the function offered. The degree of shielding affects the accessibility to the collective living domain. This can be achieved through physical architectural elements or through the programming of this space. Public spaces are characterized by the easy access and movement system (Delianur Nasutiona & Wahyuni Zahraha, 2016). According to Kutay Karaçor (2015), in public spaces there is no control mechanism and they are free of physical barriers so that accessibility and accessibility are not hindered. In private spaces, there is total control by the owner/manager over the accessibility of the space. Figure 26 is an analysis drawing showing the accessibility of private, shared (semi-private), collective (semi-public) and public spaces, from least accessible to most accessible by unknown.

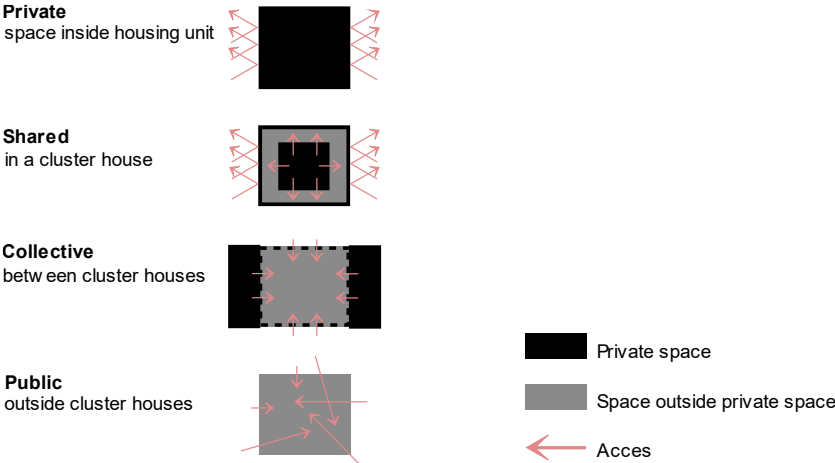


Figure 26. Analyse drawing accessibility of space

The roof garden in Kalkbreite is accessed from the street with an external staircase without physical elements which makes this space publicly accessible. The courtyard of WagnisArt is also not shielded with physical elements. This makes the courtyards of the residential complexes public. The atrium in the La Borda case is semi-accessible through an exterior door and therefore makes this space semi-private. With the permission of the residents, visitors are allowed into this space. Residents have total control over who can and cannot access and or use this space, residents have no authority among themselves because they have equal rights of use. The roof terraces

of Wagnisart are not directly shielded by doors, fences or walls, but by using physical elevation through stairs that can be reached from the courtyard, these spaces acquire a semi-accessible quality. Access to these terraces is not directly from the street as with Kalkbreite, but through two architectural barriers, street-courtyard, courtyard-trap. The private space is under the control mechanism of the resident or user. The resident has total control over who has or does not have access to his home. Shared spaces in the collective housing domain belong to the semi-private spaces. These spaces are shared by different households so there is no total control over accessibility. Co-residents have equal authority and can invite visitors or give permission to use the shared spaces. Thus, residents do not own the shared spaces and facilities, but only have equal user rights with other residents.

Dwelling unit and shared space

The case studies revealed that two types of housing units were used in cluster homes. In figure 27, an analysis drawing has been made for both housing types. The left drawing depicts a cluster house with two living units that use facilities in the shared space. These living units consist of minimal obligatory spaces, such as a bedroom, shower/toilet and space for countertops. The absent amenities such as living space, outdoor space, expanded kitchen, storage room, laundry room and work space are shared by both living units. Minimizing private space and maximizing shared spaces to facilitate collective functions provides more space accessible by multiple households. The reduction of surface areas in private living units provides more square meters of collective spaces where joint activities can be done to enhance neighborly interaction. The shared spaces serve as a complement to the private housing units. Here, amenities are shared so that the feeling of living together is reinforced. A furnished living area, large kitchenette and dining table, laundry rooms and work areas facilitate the functions that otherwise each private housing unit must have. Merging all these shared facilities saves in space and enhances interaction and increases accessibility to more area. The drawing on the right depicts the same cluster housing unit where the facilities are not shared. Each residential unit is provided with the same private facilities. In this cluster dwelling, the probability of interaction between the residents is less than the left cluster dwelling. Also, the use of the shared space is less intensive and there is a chance that this space will be used only for traffic. This means that sharing facilities, which are absent in the private housing unit, encourages interaction with fellow residents and spaces.

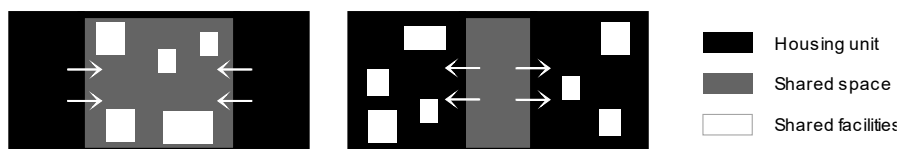


Figure 27. Analyse drawing clusterhousing units and shared space with different amount of facilities

The difference between the housing typologies studied in the collective housing forms is in the amount of facilities available to the housing unit. Presence of its own kitchenette and an extra room makes the housing unit less dependent on the shared facilities. The absence of these facilities encourages residents to use the shared amenities. As a result, the kitchen in the shared space will not only be used for cooking, but also for meeting each other, making contacts, getting acquainted and strengthening ties with fellow residents.

Circulation is shared space

The traffic space falls under collective spaces that have other shared functions in addition to making connections. This can be seen in residential block A of Mehr als Wohnen and WagnisART. Here the collective in-between spaces are at the same time also the connecting spaces to the common functions and living units, except for the stairwell, because in all case studies it still remains a hard boundary between living and moving. In the La Borda case, the traffic space, the atrium gallery, continues as a collective space on the second floor. Deeper galleries in front of housing entrances serve as semi-private spaces where residents place personal belongings.

Residents and visitors meet randomly in circulation spaces within a building, and communication between these parties is casual and anonymous, just like in a public space (Fornasier, 2018). Fornasier also asserts that circulation areas become potential spaces as the spatial quality allows for interactions that produce a sense of community and identity for the building. Thus, circulation space turns into meeting and recreational space. This potential of circulation spaces in collective housing has been remarkably revealed through the case studies reviewed. Besides traffic, other residential functions are added, a hybrid space, as in the case Mehr als Wohnen. The Kalkbreite has a long network of corridors connecting different cluster units, but except for the stairwells, most of this traffic space is in the cluster house itself. These serve as both a connecting space throughout the building and internal traffic and meeting space for residents.

Creating shared space in co-housing

While designing spaces in co-housing, it is important to orient on accessibility. The difference with traditional housing is that it focuses on the private (space and amenities) while co-housing facilitates the collective.

According to the Dutch Building Code, a dwelling must have at least one accommodation area with one or more accommodation rooms, a toilet room, a place for a sink and a place for a stove (A.C. Ton et al., 2014). These facilities are located in the private housing unit and can be expanded in the shared space. For target groups with point of view on private living desire, it is obvious that primary facilities are not shared. For spaces that facilitate recreation and encounters such as balconies, terraces, gardens, shared living space and facilities that fall outside the primary areas such as work/hobby areas and laundry room can be programmed in shared space. This programmatically shields spaces from users. Boundaries are drawn in who has free access to a user's specific space and amenity. The housing units that function more independently due to private facilities have higher costs financially. To reduce costs and make living more affordable, the choice is made to share as many spaces and amenities as possible with fellow residents. This increases the social and physical resilience of residents (Jarvis et al., 2016). Users of these housing units choose this form of living themselves and are willing to share more. In the cluster homes in WagnisArt, Kalkbreite and Mehr als Wohnen, the individual homes have been kept minimal in space and amenities to provide more space for collective use. One of the main facilities is the kitchen. The kitchen is the heart of the house (Vestbro, 2010). All analyzed case studies have a large shared kitchen and as a complement a dining area. The kitchenettes are located in large rooms where other activities are also carried out. Hagbert et al. (2019) describes that sharing everyday activities, such as cooking and eating nurtures the feeling of family, and this is the essence of co-housing. In summary, there are two types of housing typologies in collective living. Residential units that can operate independently by relying less on the shared space and residential units that are fully programmed on shared amenities. Both housing types fit into a cluster home and the difference is in the amount of private and shared facilities/spaces.

C. Conclusion (relation to design)

In this research, I focused on co-living which serves as an alternative housing model for financially vulnerable target groups. The collective/common space is the main element of this housing model. To solve the affordability of housing with the co-housing, it has been important to analyze the problems in the current housing market and of the target groups. As a cause of the housing problem among the target groups, we see that solos and couples with low and middle income are poorly represented in the housing market. Financial and economic factors play a big role in the housing of the house seekers.

The affordability and quantity of housing supply is decreasing compared to the demand. The target groups have a poor financial position in the housing market so they do not qualify with housing to their liking and what is also affordable, they fall between the cracks. The current housing market offers little room for these vulnerable target groups to obtain housing. In several European countries, the alternative housing model is being realized to address this issue, co-housing. The organizational and economic positions of cooperatives provide protection for the financially vulnerable housing seekers. The similar social housing cooperatives in the Netherlands, compared to the cooperatives, are more focused on profit based development and in the long run do not appeal to the financially vulnerable target groups, because they are also affected by market speculation. It can be concluded that the realization of cooperative initiatives can largely reduce the housing problems among the discussed target groups in the Netherlands. The new way of living in the city, changing lifestyles and typologies bring new innovations that offer many future prospects in terms of attractiveness sustainable and affordable housing.

Now that we have seen that co-housing is an alternative solution for affordable housing, we will go further into the housing quality and the production of social cohesion from initiative phase to usage. Shared living provides space for the private as well as the collective. The case studies show that each cluster house or residential buildings have programmed private living units under the name of collective living so that the resident also has space that he or she does not have to share. A space to be able to withdraw yourself. In this way, the resident's privacy is maintained, while there is room for a vibrant community and more social activities are offered. A key issue in co-housing is the development process. In the development process of shared housing projects, community residents can contribute to the design or programming of their private and collective spaces. In all researched case studies, resident initiatives played an important role during the development phase. Therefore, the outcome of the project is based on common interests and agreements. Future residents get the feeling of connection with the project and other future residents in this way, a community is created. By strengthening social ties between future residents during the design process, participation in the community as a resident or joint activities while living, it also provides a safe and stable social infrastructure between residents.

The housing process as a whole should strengthen social cohesion among residents. Shared and collective spaces are the breeding ground for this. Architecture is not the direct resource what generates the production of social cohesion among residents. Architectural articulations serve as a tool that create spaces and increase opportunities for interaction among residents. The participation process creates a basis for social bonds among future residents. Collective/shared spaces ensure that

these bonds are strengthened by bringing residents together to ensure social cohesion

The answer to the research question: “ *How can the programming of collective and shared spaces in co-housing enhance interaction and social cohesion among the residents from different social and economic backgrounds?* ”, can not only be answered by researching and understanding the collective/shared spaces. The degree of participation of future residents and their individual interests that intersect in the same living environment form the basis. Spaces alone do not strengthen social cohesion, they create the base where social bonds can take root. The shared/collective spaces play a major role for the interaction between the residents. In the analyzed case studies, these spaces have a dominant presence in the residential program. The size and number of facilities distributed between the private and collective/shared space show variations across the case studies. For example, dwellings in La Borda have all the amenities as a traditional home. In addition, residents have access to collective spaces and facilities. These homes are more self-sufficient compared to the homes in WagnisArt, Kalkbreite and House A.

The distribution of facilities between private and collective determines the interaction between residents. Shared kitchens, laundry rooms and living rooms allow residents to interact more frequently. Cluster homes in Kalkbreite and House A each have shared facilities such as kitchens, dining and living spaces. In Kalkbreite, these spaces are accessed through a corridor while House A has no dedicated circulation space within the cluster homes. The private living units are directly bounded by the shared facilities. Just as Fornasier (2018) also claims, residents and visitors meet randomly in these traffic spaces and the communication between these parties is casual and anonymous. House A has eliminated these traffic spaces and merged them with the living space. Residents do not meet in the corridor, but in the living space. Instead of standing and having a quick conversation, just like in a hallway, residents can sit on the couch and socialize more extensively. In addition to leisure activities, shared spaces also give residents a sense of responsibility. A shared kitchen used by multiple residents will also need to be cleaned and tidied up structurally. Agreements, expectations and trust among residents that arise from using the same spaces and facilities strengthen social ties.

Relation to design

My design provides housing for solos and low-income couples who want to live in cluster housing. By sharing spaces and facilities, the monthly rent remains low while the cluster housing residents have access to large collective living spaces, kitchen and other facilities. Middle-income couples qualify for the private residences equipped with all facilities. In addition to the private spaces and facilities, the residents of these houses also get access to collective spaces so that their living environment is not limited with their private home. Residents come into contact more easily and neighbors know each other better. Couples are the appropriate occupant profile for the private housing because they can live for a long period of time. Large homes with multiple bedrooms provides opportunity for longer living time even after family growth. This solidity binds the resident more tightly to their home and environment.

The design offers both, private housing and cluster housing units. Future residents are given the choice to choose the degree of permanence. For example, tenants of apartments in the cluster housing units are free to break the lease. The owners of the private homes are given the same rights as given to property owners by legislation. They are free to use their homes, except for subletting which creates market speculation and competition between the cooperative and current owner. The

cooperative operates as a non-profit organization. By buying or renting a housing unit, the owner or tenant is part of this organization and their vision, to provide affordable housing to financially vulnerable target groups. In the complex, the possibility for flow-through between cluster housing and private housing units is created. If a private residential unit is up for sale, the tenant of the cluster home will have the right to take it over via the cooperative. In this way, residents remain in the same complex and social contacts are not lost. The first right of purchase is given to the cooperative. So that the dwelling remains in the management of the cooperative. The cooperative will then look for the new owner itself and thus maintain the applicable rules among the organization. During the sale of the home, it is not handled according to market values. By distancing themselves from market speculation, the residential units remain affordable and become more independent from extreme price increases. The value of the property is limited by the WOZ value determined by the municipality. In this way, overbidding and extreme price increases, due to other external factors in the housing market, are prevented. The homes remain intended for the target groups.

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Pictures

Figure 8: The multipurpose room seen from the patio. (z.d.). [Photo]. La Borda - Cooperative Housing. <https://eumiesaward.com/work/4554>

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Graphic novel

Graphic novel description



Me (designer)



Lucas and his wife



Protester

Lucas, the main character, goes through several stages as a housing seeker and becomes eligible with the hybrid co-living project. He does not have much chance in the housing market. Therefore, the cooperative project is an indispensable opportunity for him. He participates as future residents of the cluster home, later he meets Ilse and begin living together.

The story consists of five phases. Housing seeker, participation process, realization period, initial phase of his housing period and further into the future. In all the 5 phases Lucas sees what it means to be a housing seeker and to participate in a project of the new form of living which brings hope and stability for in the future. He meets his future wife, got married and is having a child.

I, as a designer participate in phase 2 and 3. The guidance during the design process and realization period. The early years of living and later in the future Lucas finds out that living in a co-housing has many advantages, but also some disadvantages. Living with other roommates can sometimes be disappointing. In the beginning, everyone followed the rules, but as time goes on, fellow residents begin to not follow the house rules. Fortunately, co-living has more benefits. The neighbors give parties in the main hall, residents can reserve the joker rooms for their visits, and finally, Lucas, he gets the right to buy a house in the same building without paying the highest price. From renter to home owner.

Phase 1: Home seeking



Phase 2: Participation

We have to programme a housing plan and floor plans together. At the next meeting, we should also discuss the financing, because the construction costs are too high... We need also professional assistance

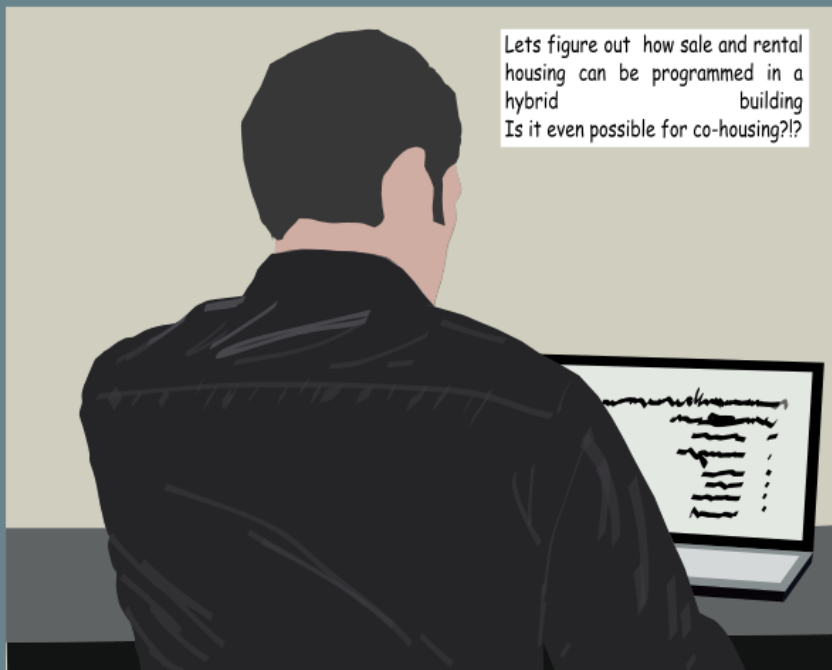


To make it financially feasible and to attract other target groups we will sell also dwellings. They will of course remain under the management of the cooperative.

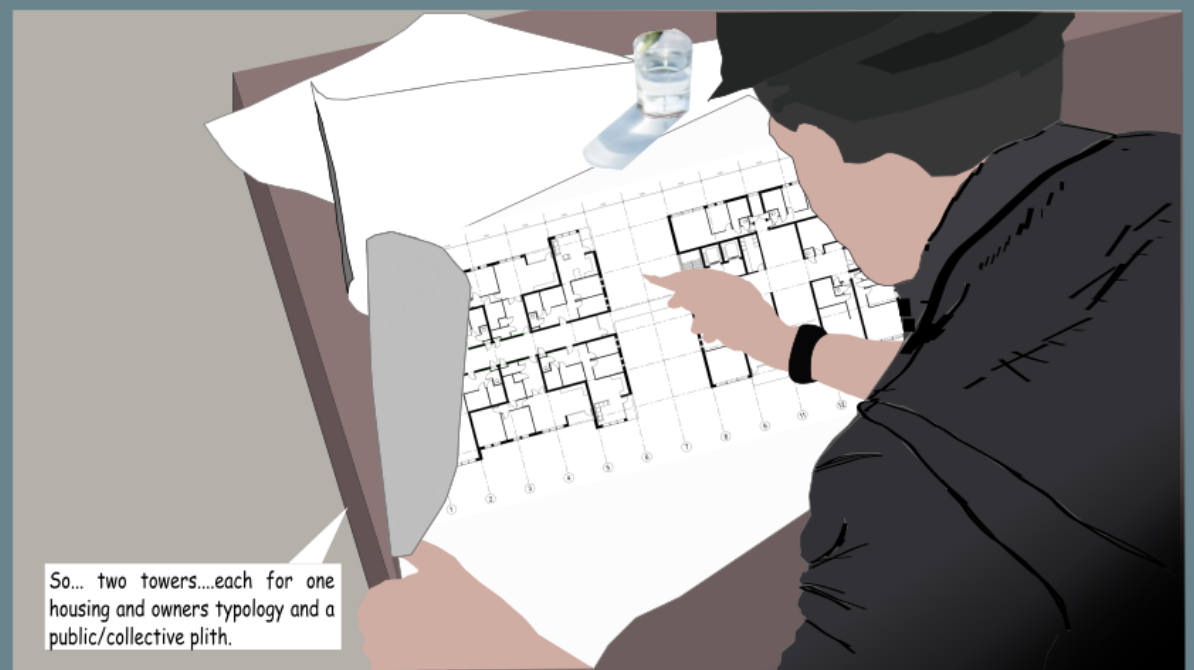
I have just been called if we want to participate in the entire process of a cooperative housing project. This is fairly new...will yo investigate what is possible in the regulations and building decree so that we can come up with a targeted proposal for the design...



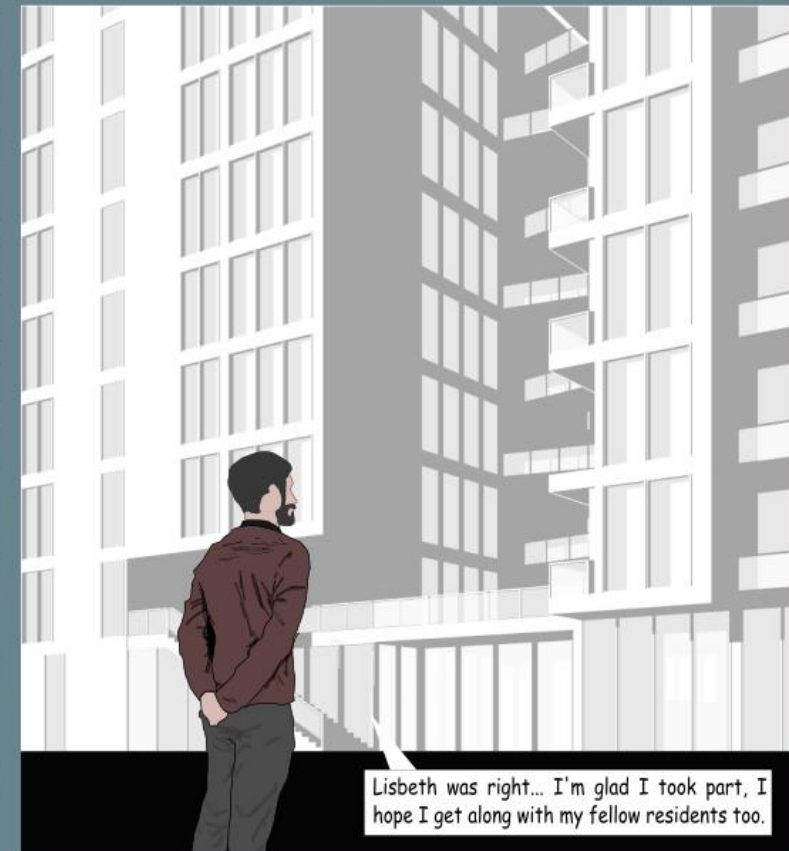
Lets figure out how sale and rental housing can be programmed in a hybrid building
Is it even possible for co-housing?!?



So... two towers...each for one housing and owners typology and a public/collective plith.



Phase 3: Realization



Phase 4: First year



Phase 5: Years later

Have you had any response about the housechange. This little one is kicking a little more frequently, i think he wants his own room too.



Guys come on you were supposed to clean up today, you know the rules, not cleaning up means buying a crate of beer.



This space is amazing!... we did have to move the birthday up a few days, but it's worth it. And next week the neighbors are hosting a lunch for the new residents, so don't miss it.

